

WHAT IS CLAIMED IS:

1. A method for determining implications in a word-level network, comprising:
 - 5 generating a graph data structure representation, comprising one or more nodes, each node having an associated range;
 - identifying a first unjustified Boolean node;
 - limiting a first input range, of a first input to the first unjustified Boolean node, to contain no value of type non-controlling;
- 10 performing a first implication process, upon the ranges of the graph data structure, using the first input range limitation;
 - limiting a second input range, of a second input to the first unjustified Boolean node, to contain no value of type non-controlling;
 - performing a second implication process, upon the ranges of the graph
- 15 data structure, using the second input range limitation;
 - accumulating a first result of the first implication process with a second result of the second implication process.

2. The method of claim 1, further comprising the following steps:
 - identifying a third unjustified Boolean node as a result of limiting the first input to the first unjustified Boolean node; and
 - 20 limiting an input range, of an input to the third unjustified Boolean node, to contain no value of type non-controlling.

3. The method of claim 1, further comprising:
 - identifying a third unjustified Boolean node; and
 - 25 performing the first implication process with a combination of an input range, of an input to the third unjustified Boolean node, set to contain no value of type non-controlling and the first input range, of the first input to the first unjustified Boolean node, set to contain no value of type non-controlling.

4. The method of claim 3, further comprising:

identifying the first unjustified Boolean node, and the third unjustified Boolean node, as a result of the set of constraints.

5. The method of claim 3, wherein the identification of a third unjustified Boolean node is limited to be within a pre-determined number of levels of the
5 first unjustified Boolean node.

6. The method of claim 2, wherein the identification of a third unjustified Boolean node is limited to be within a pre-determined number of levels of the first unjustified Boolean node.

7. The method of claim 2, further comprising:

10 removing the third unjustified Boolean node, from further limitation of an input range to contain no value of type non-controlling, if an inclusion of the third unjustified Boolean node, in an implication process, produces an amount of learned implications that is below a threshold of learned implications that is determined from an inclusion of at least a fourth unjustified Boolean node in a
15 previous implication process.

8. The method of claim 2, further comprising:

removing the third unjustified Boolean node, from further limitation of an input range to contain no value of type non-controlling, if an inclusion of the third unjustified Boolean node, in an implication process, produces a percentage of
20 learned implications that is below a threshold percentage of learned implications that is determined from an inclusion of at least a fourth unjustified Boolean node in a previous implication process.

9. A computer program product comprising:

25 a computer usable medium having computer readable code embodied therein for determining implications in a word-level network, the computer program product including:

computer readable program code devices configured to cause a computer to effect generating a graph data structure representation, comprising one or more nodes, each node having an associated range;

5 computer readable program code devices configured to cause a computer to effect identifying a first unjustified Boolean node;

computer readable program code devices configured to cause a computer to effect limiting a first input range, of a first input to the first unjustified Boolean node, to contain no value of type non-controlling;

10 computer readable program code devices configured to cause a computer to effect performing a first implication process, upon the ranges of the graph data structure, using the first input range limitation;

computer readable program code devices configured to cause a computer to effect limiting a second input range, of a second input to the first unjustified Boolean node, to contain no value of type non-controlling;

15 computer readable program code devices configured to cause a computer to effect performing a second implication process, upon the ranges of the graph data structure, using the second input range limitation;

computer readable program code devices configured to cause a computer to effect accumulating a first result of the first implication process with a second result of the second implication process.

10. An electromagnetic waveform comprising a computer program, the computer program for determining implications in a word-level network, the computer program comprising the following steps when executed by a data processing system:

generating a graph data structure representation, comprising one or more nodes, each node having an associated range;

identifying a first unjustified Boolean node;

30 limiting a first input range, of a first input to the first unjustified Boolean node, to contain no value of type non-controlling;

- performing a first implication process, upon the ranges of the graph data structure, using the first input range limitation;
- limiting a second input range, of a second input to the first unjustified Boolean node, to contain no value of type non-controlling;
- 5 performing a second implication process, upon the ranges of the graph data structure, using the second input range limitation;
- accumulating a first result of the first implication process with a second result of the second implication process.